

## 2 Updating Open Development: Open Practices in Inclusive Development

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### Introduction

Given that the intention of this book is both to synthesize and to draw practical lessons from a wide variety of *open development* activities, definitional clarity is helpful to allow some generalization and cross-domain learning. The aim of this chapter is to provide a deeper understanding of open development and present a clearer definition of the concept for use in research. In refining our understanding, the definition that we offer is derived from years of research and theory building. It provides a basis for synthesis across cases and domains explored in this book (e.g., comparing lessons from open educational resources (OER) with lessons from open government data). It also focuses more succinctly on the digital knowledge commons as a core theoretical underpinning of open development, a focus that emerged from researchers in various fields adopting this perspective. It also represents a turn away from a technology and network-centric definition.

The chapter starts with a discussion of the term *open development*, its evolution, and a refined definition. It provides a brief overview of key research fields, movements, and concepts that inform openness in general and open development in particular. The contributing schools of thought are useful to foreground, as they offer insights into the influences and practices of open development. We then draw on these schools of thought to refine and operationalize our definition of openness further, with a focus on openness as *praxis*, which is about bringing theory into action.<sup>1</sup> We conclude with a few thoughts on open development and its relationship to other fields of inquiry.

### (Re)defining Open Development

When the International Development Research Centre (IDRC) started exploring research and field building on open practices in different domains, the field itself was undefined. While there was an emerging interest in the potential of openness across

many domains, such as data, educational practices, science, knowledge, and access to scholarly publishing, evidence for a link between openness and development was weak or nonexistent. There was also no consensus around what openness meant.

One of the earliest attempts to define open development took an inductive approach, selecting and extracting common features from a wide range of activities labeled as *open*. The intention was to develop an inclusive, umbrella-like definition under which the myriad of specific openness activities would fit. The resulting definition of *openness* was “shorthand for information-networked activities that have, relatively speaking, more information that is freely accessible and/or modifiable and more people who can actively participate and/or collaborate” (Smith, Elder, and Emdon 2011, iii). This definition highlighted two key elements: openness of content and openness to people.<sup>2</sup> While this definition included a wide variety of openness activities, it was also vague and proved tricky to operationalize from a research perspective.

This was followed by a more thorough treatment of open development, which framed openness as “networked models predicated on digital network technologies” (Smith and Reilly 2013, 3). These are models that “draw on the power of human cooperation and contain some combinations of...sharing ideas and knowledge; the ability to reuse, revise, and repurpose content; increasing transparency of processes; expanding participation; and collaborative production” (Smith and Reilly 2013, 3).

Since charting out this early territory, we have learned a lot from the experiences and struggles of the open development researchers whom IDRC has supported over the years. This experience has helped us to clarify and provide more nuance to the definition. Perhaps the greatest struggle comes from defining *open*. There is much debate regarding the meaning of this word, with multiple definitions being adopted across various domains and contexts. This is hardly surprising, given the relatively rapid proliferation of the use of the term and the multiple possible interpretations (Pomerantz and Peak 2016). The end result, as we detail later in this chapter, is that often these theoretical definitions of *open* do not match the reality of openness in practice, and the lack of a common definition inhibits the transferability of lessons learned.

Most openness research relies on definitions from the literature from within a specific domain or discipline of research (as discussed in chapter 3 of this volume). For instance, *open* in terms of educational resources is defined in a particular way among educators, which is different from what *open* means to the open government data community. Moreover, researchers referenced throughout this book found that domain-specific definitions did not always resonate with the reality of openness in Global South contexts. For example, there are cases where governments intended to share their data openly, but their efforts did not match the strict definition required by open data theorists. There

are also cases where educators shared educational resources openly without a particular intellectual property license required by the widely accepted OER definition. This mismatch between definition and the reality that the researchers uncovered was a common theme emerging from many country contexts and domains of action. To exclude examples from nonconforming initiatives around the Global South would greatly limit our understanding of the reality of how openness plays out on the ground in countries where, for example, strong copyright institutions or cultures are not the norm.

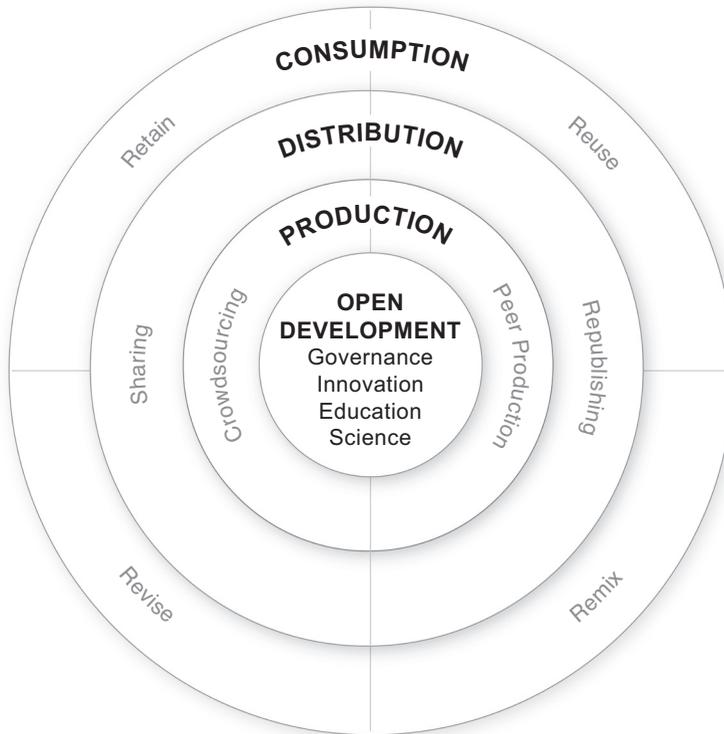
Another common feature is that domain-specific definitions also tend to define *open* as digital content with specific features (such as an appropriate copyleft intellectual property license). We found that this emphasis distracted researchers from issues that we find to be more relevant to the overall success of an open initiative. Typically, the focus on the openness of digital content led to interventions dominated by a supply-side approach, largely ignoring and eschewing responsibility for whether the knowledge resource is part of a change process or not.

Furthermore, conceptualizing openness in terms of digital content with particular attributes makes impact evaluation challenging. Does it make sense to talk about the impact of data that is open, in terms of copyright, if it sits on a website that is never used? The upshot is that we found that researchers who adopted a content-specific definition of *open* struggled to assess or evaluate the impact of openness interventions. Perhaps, not surprisingly, there is little by the way of impact or outcome research in the area of open development thus far (Bentley and Chib 2016).

A key takeaway from these experiences is that digital content does not have an impact on its own; impacts emerge only through the production, sharing, and use of content. This influenced the theorizing of openness presented here that focuses not on digital content, but rather on the particular practices of producing, sharing, and using knowledge resources.

Finally, a further problem of using domain-specific definitions is that they make potentially informative comparisons across openness domains difficult, if not impossible. For example, even though they both share an *open* label, the definitions of OER and open government data are different, and comparing them is to compare apples and oranges. Ideally, we would like to be able to learn and share lessons, where possible, from experiences and research across domains, and, in so doing, be able to avoid making the same mistakes many times over. This will accelerate improvements in open development overall.

Drawing from these challenges and from the research found in this book, we update the definition of open development as follows: *Open development is the strategic application of open production, open distribution, and/or open consumption of knowledge (often via the digital ecosystem) in the pursuit of advancing human development.*



**Figure 2.1**

Open development as it plays out (such as in education, science, and governance) consists of the practices of producing (crowdsourcing and peer production), distributing (sharing and republishing), and using (retaining, reusing, revising, and remixing) digital or analog resources.

There is a lot to unpack in this definition (illustrated in figure 2.1), including what we mean by “open production,” “open distribution,” and “open consumption,” which we cover in this chapter. This definition offers several clear advantages. It provides both an abstract, crosscutting approach that can be made more specific to accommodate different openness activities and contexts. Furthermore, the greater specificity of the definition through its focus on open practices helps to address the research challenges highlighted previously.

Before unpacking the history and the iteration of the definition, we offer a few observations to help clarify and provide a contrast to past thinking.

First, the definition is agnostic as to the nature of development itself, although it tends toward a normative, or politically progressive, understanding of human development, in that the concern is about expanding human capabilities. It also generally

refers to openness within international development contexts. This is consistent with earlier definitions (e.g., Reilly and Smith 2013, 32). One could imagine taking a more ideological position, whereby the definition of what constitutes development—particularly around political and socioeconomic considerations—shapes the contours of the open development definition. However, the focus here is more on the connection of openness to development and how to best engage in open activities to advance development aims, where development itself is defined by the goals of the activities.

Second, this definition places a greater focus on knowledge resources.<sup>3</sup> The first definition of *openness* focused on information-networked activities, or “digital openness” stemming in part from the history of information and communication technologies for development (ICT4D) and literature on the network society (see chapter 2 in Reilly and Smith, 2013). This new definition foregrounds knowledge resources rather than the digital networks that make the production, distribution, and use of these resources possible. In so doing, this definition opens up the possibilities for integrating models of openness that are not driven by technologies. As mentioned, this change of perspective was influenced by IDRC-supported research on open development (see, for example, chapters 3, 6, 10, 12, and 13 in this volume).

Therefore, third, the definition no longer refers exclusively to digitally enabled openness. As the research over the past decade has shown, there are many, typically local, open development activities in developing countries that extend a digitally open initiative through analog means, meaning that not all open development processes are necessarily digital. For example, open budget transparency initiatives sometimes involve holding community meetings and distributing posters about government service delivery in health centers and schools. Indeed, one might argue that in some contexts, local analog (offline) transparency initiatives tend to prove more effective than large-scale national, digital open data based ones. See chapter 3 for further arguments against requiring a link between openness and digital.

At the same time, the benefits of lowered transaction costs and massively increased reach of digitally enabled (typically Internet-based) open activities have propelled the rapid increase in interest in openness since the advent of open-source software. Just as the printing press was a boon for the transmission of selective kinds of knowledge, the ease of replicating and distributing digital content through the Internet has greatly expanded the potential reach of the knowledge itself, including in analog forms.

Fourth, this definition shifts the undergirding theoretical emphasis away from (digital) information networks and the network society and grounds it in the vision of the knowledge society. This is not to suggest that networks are not critical features of today’s society, nor that seeing the world through a network society lens is not

useful for analyzing open development initiatives (see, e.g., chapter 10 of this volume). Rather, this shift emphasizes a society where learning, training, and participation are core activities (Mansell and Tremblay 2013) and inclusive production, distribution, and consumption of knowledge play a key role in supporting these activities. It is the movement toward elements of social change that interest us. Thus, open development, while for the most part predicated on digital information networks, contributes to social change through innovations of *open* production, distribution, and consumption of *knowledge* resources. As de Beer writes in chapter 3 of this volume, “the tension between control over and access to knowledge is a—perhaps *the*—unifying thread in open development.” This has implications not just for the literature that informs open development, but for policy as well, particularly with respect to intellectual property rights (see chapter 6 of this volume).

Finally, the new definition is also much more specific about *open praxis*—bringing theory into action—manifesting as processes and practices. As detailed next, there are three open social processes: production, distribution, and use. The *action*-orientation implied in open praxis ties directly into participation and broad-based engagement, and thus into inclusion—the focus of this book. We have found that this focus on praxis, and these specific open social processes, helps to improve clarity and accuracy when engaging in research and enables comparative research through a common theoretical framing. It also makes for easier identification of other relevant literature that may refer to similar practices but use different terms. Finally, it connects openness with use and, therefore, improves understanding of potential pathways from openness to development outcomes (Smith and Seward 2017). We explore some implications of this approach in more detail later in this chapter.

### Contributing Schools of Thought

To understand open development, it is helpful to understand the historical context from which the variety of new openness innovations has emerged. The working definition of *open development* offered in this chapter draws heavily from across these contributing schools of thought and provides an overarching theoretical framework to bring different schools of thought into conversation with each other. One hope for this approach is that it can engender a more interdisciplinary and fruitful path forward for open development, which is already a multidisciplinary field of inquiry.

These are not meant to be comprehensive discussions, but merely distillations or highlights of common recurring themes in open development literature. In many ways, these main contributing schools of thought can be seen as part of the open

**Table 2.1**

Open development contributing schools of thought.

School of thought	Contributions
Open government	Freedom of information Transparency for accountability
Participatory development and ICTs	Participation as agency Participation as shorthand for inclusion Technology facilitating agency/new participatory processes
Commons-based peer production	Open-source software Open (copyleft) licensing User freedoms: reuse, remix, repurpose, republish
Open innovation	Chesbrough and crowdsourcing von Hippel: User-centered, <i>free</i> innovation
Access to knowledge	Right to knowledge Knowledge as key to justice, freedom, and economic development
Knowledge commons	Community governance (creation/sharing) of shared knowledge resources
ICT4D	Connection between ICTs and social change Importance of local context Multiple approaches to development

development literature. This discussion is also useful for pointing readers to other relevant literature that may not always be immediately associated with open development.

### Open Government

According to scholars, *open government* emerged as a recognizable term in the 1950s, largely due to journalists and newspaper editors in the United States demanding greater transparency in government decision-making after World War II.<sup>4</sup> One of the first uses appeared in the foreword of a report in 1953 (Cross 1953) about people's right to access public records and proceedings (Yu and Robinson 2012, 185).<sup>5</sup> This seminal report became a foundation for journalists in the United States and the freedom of information movement more broadly. From 1953 on, open government began to resonate more widely as a principle for government transparency and accountability. In 1955, the US Congress created a subcommittee on government information where the main counsel for the committee used the term in an article on public information to convey the need for government accountability.<sup>6</sup> These works on open government in the 1950s helped generate greater public scrutiny and interest in holding governments

accountable and also helped to spark far-reaching legislation like the US Freedom of Information Act (FOIA) of 1966 (5 U.S.C. § 552).

Inspired in part by the digital innovation of open-source software (more on this next), open government got a reboot in the twenty-first century. This new iteration, not unlike the 1950s version, is generally undergirded by a similar idea—that democratic governments and governance processes should be open to public scrutiny, characterized by similar themes of transparency and accountability. However, the twenty-first-century version also foregrounds citizen participation and collaboration, acknowledging the importance of giving people (not just journalists) a voice in policymaking and decision-making.<sup>7</sup> In some sectors, open government also serves as a platform for public-sector modernization, in order to foster greater coherence in government activities, and promote more effective public oversight of governance processes. There is also a focus on open standards and open data as a means of sparking innovation and economic growth.

Yet the relationship between open government and open data generates some debate. Perhaps it is one of the ongoing tensions within democracies, or in systems of governance that aim to be more participatory, that real transparency and accountability over high-level decision-making that really matters are often lost. Open government data initiatives can promote the *perception* of transparency and accountability by releasing certain kinds of public data sets, but, ultimately, if the data sets have no real bearing on power and economic relations, then substantive changes to governance (and the promises of greater transparency and accountability) are forgotten. Because discussions around open data often fill the debate space in open governance, a hazy distinction remains between the politics of open government and the technologies used for open data (Yu and Robinson 2012, 181).

### Participatory Development and ICTs

Similar to how open government emerged to encourage citizen engagement with governance processes, participatory development emerged and gained momentum by trying to upend human development processes and make them more receptive to local beneficiary populations and less captured by Western donor-driven priorities.<sup>8</sup> And like open government, participatory development (broadly considered) was also renewed in the twenty-first century by innovative communication networking tools.

Philosophically, theories of participatory development coalesced out of critiques of post-World War II modernization ideas that elevated Western institutions and values above the values of then-colonized, so-called *underdeveloped* populations. This imposition of institutional superiority only intensified with the decolonization processes

in the twenty years following the war. While the modernization approach to development was a top-down, high-debt-inducing infrastructure and institutional development process, participatory development prioritized bottom-up, grassroots development processes that considered the value of unique cultural situations and environments.<sup>9</sup> Couched in postcolonial, emancipatory narratives, participatory development advocates a role reversal, whereby subordinated subjects take back power from dominant decision-makers and institutions. In the 1990s, participatory approaches to decision-making in development became popular, and, over time, branched out into a broad range of practices, from participatory rural appraisal, to participatory evaluation, to participatory budgeting.<sup>10</sup>

Yet because participation, like the concept of open, has both a theory and a practice component, it can also be captured for purposes other than empowerment and transformation. The mainstreaming of participation in development, for instance, meant that simple consultations and participation in project implementation were framed in emancipatory language but were often just mechanisms for gaining approval from subjects in development initiatives planned elsewhere (Huesca 2002). What participatory development offers mainstream development now is the discursive and programmatic focus on inclusion and pro-poor development; it also indicates that the principles of development for the poorest and the marginalized remain the norm. Yet relying on broad categories like *inclusion* and *marginalization* to stand in for development that prioritizes the poor conveys a much more policy-oriented (even top-down) thinking and moves the conversation away from the individual agency inherent in participatory methodologies. Fundamentally, the idea that development should be inverted to serve not educated practitioners, but rather vulnerable recipients elsewhere, remains a perennial tension in development work.

Participatory development, like open government, was repurposed with the mass diffusion of information and communication technologies (ICTs). Mobiles and social media platforms associated with the interactivity of new iterations of the World Wide Web seemed perfect for the renewal of the idea that people needed to be at the center of their development—the “participatory potential of new connectivity” according to Chambers (2010, 28–29). And importantly, these new tools brought agency back into the development conversation. As noted by Chambers (2010, 29), “With Web 2.0 for dev, and its cornucopia of potentials through email, Internet, video conferencing, participatory GIS [geographic information system], mobile phones, SMS [short message service], blogging, Twitter and beyond, a whole new domain of participatory interaction has opened up. ... The explosion of activity is based on open source technology and philosophy and participatory approaches, with continuous and multiplying volunteer

contributions from within and outside. ... It illustrates the runaway empowering potentials of new combinations of technology and volunteer commitment, energy and creativity. We are in a new space.”

Today, information and communication networks are continuing to change and upend how international development is conducted. About a decade ago, this was coined “development 2.0” (Quaggiotto and Wielezynski 2007; Thompson 2008; Heeks 2010a), though the extent of change continues to unfold in a multitude of positive—and negative—ways. Every new technology application designed to foster engagement and participation often brings with it a range of other, sometimes pernicious, issues. One increasing concern, for instance, is around data and the data exhaust from all the activities performed online, which affects human rights online (or digital rights), such as the right to privacy and the right to security. But the tools offered by mobile and web connectivity are still expanding possibilities for the participation envisioned by early enthusiasts for these methodologies.

### **Commons-Based Peer Production**

The first, and perhaps most recognized, example of commons-based peer production is the open-source software production model. Open-source software is significant as a pioneering approach and inspiration for the emergence of most other open development initiatives, such as open access to scholarly publishing, OER, open government (Mizukami and Lemos 2008), and even the ICT-based participatory development methodologies highlighted earlier in this chapter. Understanding what made the open-source software production model possible is essential, therefore, to understanding open development.

Open-source software has two important, influential features. The first is the collaborative production model that leveraged the interconnectivity provided by the Internet with the knowledge, skills, and time of volunteer programmers and the sharing of source code. This new form of collaborative production enabled the development of high-quality software products by groups operating outside of public- and private-sector firms, and without the need for large infusions of capital.

The second element is the development of copyleft intellectual property licenses, which made the open-source software production model legally possible. A *copyleft* license uses the legalities of copyright to make it legal to freely share the software while providing, rather than restricting, user freedoms. For software, this was embodied in the following four freedoms. The first is the freedom to run the program as you wish, for any purpose. The second is the freedom to study how the program works and to change it as you like. Access to the source code is a precondition for this freedom. The third is the

freedom to redistribute copies of the original program so that others can benefit from it. The fourth is the freedom to distribute copies of your modified version to others. By doing this, you can give the whole community a chance to benefit from your changes.

Together, collaborative production and copyleft intellectual property licenses formed what was later termed “commons-based peer production” (Benkler 2002). The commons-based peer production model has since evolved into a panoply of variations, including the well-known Wikipedia (Fuster Morell, Martinez, and Maldonado 2014). The movement from software to other knowledge production activities was also enabled by the development of a new copyleft licensing system via Creative Commons (CC). CC licenses provide different degrees of freedom regarding the potential use of the knowledge resource, such as to retain, reuse, revise, remix, and redistribute (Wiley 2014). These freedoms and their centrality to most interpretations of openness are discussed in more detail in the following sections.

### Open Innovation

Open innovation is another significant and influential school of thought (particularly in innovation management), with a rich and growing tradition (Huizingh 2011). There are two main subfields of open innovation: the collaborative, user-centered innovation of von Hippel and the firm-centric approach championed by Chesbrough. The democratized innovation of von Hippel (2005) focuses on the ability of firms to adopt user-centered, free innovations. These innovations are “developed by consumers at private cost,” and the innovations are not protected by intellectual property rights (von Hippel 2017, 1). This model is in contrast to the traditional innovation model, where innovations are developed by firms in a closed manner, using patents and copyrights. In this way, von Hippel’s notion of open innovation is similar to Benkler’s idea of commons-based peer production in its reliance on open resources and the ability of users to use and reuse them to fit their purposes.

By contrast, Chesbrough’s open innovation suggests that firms no longer need all requisite research and development resources in-house. This is driven by the idea that “valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well” (Chesbrough 2006, 43). While the original definition has been updated over time to reflect both pecuniary and nonpecuniary knowledge flows (West et al. 2014), the basic idea of knowledge purposefully flowing in and out of a firm is the same. The term *open* in this open innovation is employed to describe the firm and its relationship to knowledge resources.

One way that firms are able to attract purposive inflows of knowledge is through *crowdsourcing*, a term coined in 2006 (in contrast to *outsourcing*) to describe how firms

can tap into huge pools of digitally connected cheap laborers (i.e., the *crowd*) from anywhere around the world (Howe 2006). Crowdsourcing involves a central entity (individual or organization) enlisting the services of any number of people through an open call, typically through an Internet-based platform (Estelles-Arolas and González-Ladrón-de-Guevara 2012). “Crowdsourcing involves participants who are invited to contribute to highly specific and predetermined tasks, whose completion requires little effort” (Berdou 2017, 19). Key to crowdsourcing is its hierarchical and centrally managed nature, in terms of both governance and technical architecture (de Rosnay and Musiani 2016).

Some definitions of crowdsourcing have also been applied to commons-based peer production models (Mansell 2013; de Rosnay and Musiani 2016). While both models involve collaborative efforts to produce knowledge resources, we follow Benkler, Shaw, and Hill (2015) and Mansell (2013) and make a distinction between crowdsourcing and commons-based peer production models. We do this for two main reasons. First, the model of governance is quite different, as commons-based peer production is not necessarily centrally managed and hierarchical. Second, they differ in their use (or not) of commons-based information resources. Crowdsourcing initiatives do not, by definition, include sharing of the resulting crowdsourced data or knowledge products. Of course, the management of a crowdsourcing initiative *can* choose to share the results if desired. In the international development space, the sharing of the crowdsourced data is common as part of a larger change strategy, such as for awareness raising and advocacy. See chapter 14 for examples and analysis of some crowdsourcing for development activities.

While crowdsourcing here is under the ambit of open development, other elements of Chesbrough’s highly influential conception of open innovation sit uneasily within the current open development literature. This is in large part because *open* in Chesbrough’s open innovation does not adopt the commons-based approach that is found at the core of most open activities. In contrast to leveraging sharing and the freedoms afforded by copyleft licenses, open innovation, as per Chesbrough, typically requires strong intellectual property rights over knowledge resources to enable firms to extract rents from subsequent innovations. How insights from Chesbrough’s firm-centric perspective might further inform open development is discussed in greater length in chapter 3 of this volume.

### Access to Knowledge

As with other influential schools of thought in open development, the access to knowledge (A2K) movement supports knowledge generation and sharing that prioritizes benefits to the many over the exclusive rights of a few. Although it remains highly contested territory, according to Shaver (2007, 4–6), there are essentially three basic ideas

driving the A2K movement: (1) knowledge is a resource; (2) accessibility is important; and (3) governments are endowed with the means to facilitate access to knowledge and its diffusion. To explain further, this means that first, knowledge is an important resource for human well-being because it accelerates human development and innovation. In turn, the ease or difficulty of gaining access to existing knowledge is thus a significant factor in how quickly innovations can be leveraged and adopted. This includes both a concern over the cost of access, which determines how, when, and whether people can access new knowledge. It also conveys an inherent normative concern for equity, in that everyone should be able to benefit from advances in knowledge. Lastly, knowledge is public, or a *common* good, and thus falls under the purview of governments as the collective holder of public goods, in the context of the social compact between states and citizen/stakeholders. This suggests that governments have the political capital necessary to see through regulation and investment that support more equitable access to knowledge resources. See chapter 7 in this volume for more on the relationship between knowledge, public goods, and social policy.

The A2K movement emerged in the early years of the new millennium in response to what appeared to be the increasing enclosure of knowledge resources through Northern-led intellectual property regimes that were becoming “broader (covering more kinds of information), deeper (giving rights holders greater powers), and more punitive (imposing greater penalties on infringers)” (Kapczynski 2010, 24).<sup>11</sup> This has made intellectual property law “a central battleground in the struggles over the structure and spoils of the contemporary economy” by regulating information production strategies, appropriating value from that information in the marketplace, and also by trying to regulate everything “from how we are able to learn, think, and create together to how and whether we have access to the medicines and food that we need to live” (Kapczynski 2010, 24).

It has become so significant because knowledge resources have become increasingly important for the organization of human society in the twenty-first century—undergirding economic innovation, scientific advancement, and even ethical and human development. As such, the uneven distribution of knowledge stands to have an even larger impact on how societies function, how they cohere, how they grow, and how humans within those societies flourish (Castells 2000). Thus, knowledge and its generation are not only critical to human development but access to knowledge is grounded in basic human rights, in Article 27 of the Universal Declaration of Human Rights (United Nations 1948).<sup>12</sup> For this reason, one of the primary concerns of the A2K movement is to ensure that knowledge resides in the commons as a public resource, not a private one.

### Knowledge Commons

The A2K movement, as previously noted, highlights both the importance that knowledge plays in the development of societies and individuals and new agreements for equalizing knowledge access. For the A2K movement, openness innovations represent new ways that more flexible intellectual property contributes to knowledge being produced, circulated, and consumed to advance development. Put in other terms, openness innovations are new forms of governance of the knowledge commons.

The concept of the knowledge commons has its roots in the *traditional* commons as developed by Ostrom and Ostrom (1977), an interdisciplinary study of shared natural resources, such as fish stocks, water bodies, and the air (Hess and Ostrom 2007, 4). The governance arrangements of the commons exist to overcome problems thought to be intrinsic to shared natural resource commons, such as free riding and over harvesting.

The knowledge commons focuses on knowledge resources rather than natural resources. In this literature, knowledge is defined quite broadly as “all intelligible ideas, information, and data in whatever form in which it is expressed or obtained” (Hess and Ostrom 2007, 7). Through examples, Hess and Ostrom (2007, 7–8) suggest that “[k]nowledge... refers to all types of understanding gained through experience or study, whether Indigenous, scientific, scholarly, or otherwise nonacademic. It also includes creative works, such as music and the visual and theatrical arts.”

The knowledge commons, then, is “shorthand for the institutionalized community governance of the sharing and, in some cases, creation, of information, science, knowledge, data, and other types of intellectual and cultural resources” (Frischman et al. 2014, 3). It is important to note that in this case, *knowledge commons* does not refer to knowledge resources, but rather to institutional arrangements (i.e., the governance) of those knowledge resources. These governance arrangements can reside at many levels, local, global, or “somewhere in between” (Hess and Ostrom 2007, 9).

It is these institutional arrangements governing the knowledge commons that allow for “overcoming various social dilemmas associated with sharing and producing information, innovation, and creative works” (Frischmann, Madison, and Strandburg 2014, 1). Note that these social dilemmas are not the same challenges for natural resource commons of free riding and over harvesting. Rather, these threats include “commodification or enclosure, pollution and degradation, and nonsustainability” (Hess and Ostrom 2007, 5). These are clearly the challenges to open innovations. Furthermore, the governance of the knowledge commons also typically comes with a normative goal: maximizing access, equity, and sustainability (Pearson and Stacey 2017).

### Information and Communication Technologies for Development

The final contributing school of thought is ICT4D, a field that began in the middle of the 1980s as an offshoot of the information systems discipline (Heeks 2008; Walsham 2017). Information systems is not a technical field, but rather consists of the study of ICTs in society, “positioned between management studies and applied computing,” and draws on many reference disciplines (Avgerou, Ciborra, and Land 2004, 1). ICT4D furthers this multidisciplinary approach, focusing research on ICTs and social change in developing countries across a range of domains such as governance, health, education, business, and agriculture (Elder et al. 2013; Gomez 2013).

A key characteristic of the ICT4D literature is the focus on understanding how ICTs connect to socioeconomic development (Avgerou 2010; Heeks 2010b; Madon 2000; Walsham and Sahay 2006). Central to this research agenda is nuancing the relationship of technologies to social change, countering the allure of grand promises of technologically driven change to view ICTs as enablers of change embedded in social contexts and enacted through the individual agency of users (Friederici, Ojanperä, and Graham 2017; Schech 2002). Decades of studies have explored the roles and interaction of contextual factors such as levels of telecommunications diffusion, the institutional environment, socioeconomic status, and ICT skills, among others, in shaping any resultant social change and benefits related to technologies (see, e.g., Alderete 2017; Barrantes and Vargas 2016). Indeed, a corollary contribution of the ICT4D literature is illuminating the significance, role, and diversity of developing country contexts where information systems are being implemented (Avgerou 2008; Walsham 2017). In particular, this literature explores the importance of embracing both contextual sensitivity and diversity (Walsham 2001).

Open development as a potential field of research and practice emerged for some as an offshoot of the ICT4D field (see Smith and Elder 2010; Smith et al. 2011). As mentioned previously, openness was seen as a set of new social organizational models made possible with ICTs (Smith and Reilly 2013). The current definition offered in this chapter, however, is broader than these earlier definitions as it draws more heavily on the contributions and insights of the other schools of thought discussed in this chapter.

### Openness as Praxis

Having explored the origins of openness, we now describe in more detail its meaning within open development. In this section, we discuss the specifics of open as a process of producing, distributing, or consuming open knowledge resources (i.e., open production, open distribution, and open consumption of knowledge resources).

First, by knowledge resources, we are broadly incorporating the ideas behind the knowledge commons which includes “all intelligible ideas, information, and data in whatever form in which it is expressed or obtained” (Hess and Ostrom 2007, 7–8). As discussed previously, for the most part, the open development cases in this book represent knowledge in a digital form, although digital representation is not a necessary condition to fit within our consideration of open development.

The term *open knowledge resources*, then, refers to knowledge resources that are publicly shared at *no cost*. This content may or may not be legally in the public domain or openly licensed. This definition is in contrast to other definitions that require resources to be in the public domain or openly licensed (see, e.g., Open Knowledge International’s collaboratively developed “Open Definition”<sup>13</sup>). However, our definition allows us to capture the reality that much of the research in this book uncovered; for users of knowledge resources in many developing countries, the line between free, illegal, and open is often blurred at best (Smith 2014; Smith and Seward 2017). Thus, rather than excluding these activities, we choose to include them within the scope of our understanding of open development. Note that this is an analytical position rather than a normative one. We are not saying that illegally downloaded and shared resources are either good or bad, but rather that, as the research shows, the normative stance depends on both the context and one’s particular perspective.

The second definitional component is comprised of three processes of *open production*, *open distribution*, and *open consumption* of knowledge resources (see table 2.2). First, *open production* processes are knowledge production processes that take advantage of collective intelligence (Bollier 2007). In particular, the two most common knowledge production models in open development are crowdsourcing and peer production. Second, *open distribution*, which is also known as *sharing and republishing*, is the practice of making knowledge resources publicly available, which are typically (but not solely) accessed via an Internet-based platform. In other words, it is the sharing of open knowledge resources. Open distribution can have many purposes, such as contributing to the knowledge commons, achieving communications goals, or instigating behavior change, to name a few. It is useful to note that we consider transparency to be sharing with the purpose of accountability.

Third, *open consumption* refers to the set of uses of knowledge resources afforded by the fact that they are shared open knowledge resources. Typically, the affordances are mostly thought to be a function of different legal and technical configurations of content, but they are subject to social influences as well. One typology for open consumption practices, the 5 Rs (retain, reuse, revise, remix, and redistribution), comes out of the OER literature (Wiley 2014). Hodgkinson-Williams (2015) has extended and

**Table 2.2**

The three open processes, with their associated practices and key characteristics.

Open process	Practice	Key characteristics	Examples
Open production	Peer production	Decentralized governance Nondiscriminatory Voluntary contributions Free to participate	Open-source software production, Wikipedia, open legislation
	Crowdsourcing	Centralized governance Nondiscriminatory Voluntary contributions Free to participate	Open innovation, citizen science, Ushahidi, ICT-enabled citizen voice
Open distribution	Sharing, republishing	Nondiscriminatory Nonproprietary Typically via platform	Open government data portal, OER Portal (e.g., Khan Academy), open access journals
Open consumption	Retain, reuse, revise, remix	Freedoms to use Free (no cost)	Translating educational materials, taking a massive open online course (MOOC), intermediary visualizing open government data

Source: Smith and Seward (2017).

clarified this typology by providing a more concrete operationalization of the 5 Rs, applying it to OER (see table 2.3). For more on OER, see chapter 12.

There are a few important caveats regarding the interpretation of *open* that we use here.

First, these processes are open when they have two characteristics: they are free (no cost) and there is no exclusion criterion (nondiscrimination) for participation in these processes (Smith and Seward 2017). These are *theoretical* characteristics. As the many cases in this book will illustrate, while there may be no fee charged to use openly shared knowledge resources or to engage in open production processes, there is always some cost to doing so, be it related to time or financing or connectivity costs. Similarly, there is a requisite level of access and skills, among other things, required to engage in an open practice. These issues are perhaps even more relevant in some Global South contexts, where Internet connections may be more expensive relative to income, and many may not have the requisite skills to engage. See chapter 9 for a more in-depth look at some of these factors.

Second, it is perhaps more accurate to say that the nondiscriminatory nature of some openness practices is bound to a particular community or geography. For example, HarassMap, an online crowdsourcing platform that collects incidents of sexual

Table 2.3

Types of reusability in OER.

Types of reusability	Ways of reusing an OER	Operationalization
Reuse	Use <i>as is</i> or copy verbatim	<b>Copy:</b> Make a copy of the original
Revise	Edit, modify, adapt, and improve the OER so it better meets your needs by reauthoring, contextualizing, redesigning, summarizing, versioning, repurposing, translating, personalizing, resequencing the content	<p><b>Contextualize:</b> Changing content or adding new information in order to assign meaning, make sense through examples and scenarios</p> <p><b>Redesign:</b> Converting a content from one form to another, presenting pre-existing content into a different delivery format</p> <p><b>Summarize:</b> Reducing the content by selecting the essential ideas</p> <p><b>Repurpose:</b> Reusing for a different purpose or alter to make more suited for a different learning goals or outcome</p> <p><b>Version:</b> Implementing specific changes to update the resource or adapt it for different scenario.</p> <p><b>Translate:</b> Restating content from one language into another</p> <p><b>Personalize:</b> Aggregating tools to match individual progress and performance</p> <p><b>Resequence:</b> Changing the order or sequence of the materials</p>
Remix	Combine the original or revised content with other open content to create something new	<p><b>Decompose:</b> Separating content in different sections, break out content down into parts.</p> <p><b>Remix:</b> Connecting the content with new media, interactive interfaces or different components</p> <p><b>Reassemble:</b> Integrating the content with other content in order to develop a module or new unit</p>
Retain	Make, own, keep and control (curate) copies of the content	<b>Save:</b> Make and save a copy
Redistribute	Share the original OER or your new version with others	<b>Share:</b> Share the original OER or your new version

Source: Hodgkinson-Williams (2015).

harassment, is restricted to inputs from Egypt. Bailur and Sharif examine HarassMap and other crowdsourcing activities in chapter 14.

Third, this definition does not cover *all* contemporary uses of the term *open*, as some have only one or none of what we call the key characteristics of no cost and nondiscrimination (see table 2.4). For example, in chapter 8, Gillwald discusses open access broadband policy. This is a form of competition policy to promote access to telecommunications infrastructure, rather than something that directly involves knowledge resources. Similarly, open access in telecommunications policy and regulation typically has two principles: price transparency and nondiscrimination. Therefore, while the price of information is made transparent, there is a fee to participate. This use of open as nondiscriminatory but with a fee to participate also can be found elsewhere. For example, open universities around the world follow the same general model: they are open to anyone to attend, but with associated student fees (Agbu et al. 2016).

In a slightly different vein, open WiFi (also known as *free public WiFi*; see chapter 8), offered by some municipalities as an approach to tackling digital inequality, provides nondiscriminatory, no-cost access to the Internet (a large and complex knowledge resource) (Geerds et al. 2016). Thus, one could argue that it is a form of open distribution of the Internet as a whole, not of any specific knowledge resource.

While recognizing the potential diversity of meanings and interpretations of the terms *open* (*openness*) and *development*, we opted for the working definition that we have given in this chapter. Note that the definition provided in this book is intended to be neither definitive nor final. The research here highlights a diversity of meanings and interpretations of the terms *open* and *development* across contexts—a point that we attempted to incorporate into our working definition. Most of the research discussed

**Table 2.4**

The free and nondiscrimination characteristics of different open practices.

	Free to use/participate (no cost)	Nondiscrimination (anyone can use/participate)
Shared OER	✓	✓
Shared open government data	✓	✓
Commons-based peer production	✓	✓
Crowdsourcing	✓	✓
Open universities	×	✓
Open broadband policy	×	✓
Open access in telecommunications policy and regulation	×	✓
Open WiFi	✓	✓

in this volume does not employ the definition explicitly—although some chapters do (e.g., chapters 7, 8, and 9). However, the particular component practices of open (peer production, crowdsourcing, sharing, and reuse) form the main set of vocabulary that authors use when synthesizing the open development research.

Making this definition explicit helps us to more precisely delimit the contribution that this book makes to knowledge and development practice. Understanding the distinctions highlighted here allows us to understand if and how we can learn lessons across activities. It also makes it clear when open or openness has different referents, making comparisons more challenging or even impossible. This is particularly useful for those uses of open that fall slightly outside the definition focused on knowledge resources (such as the work on open broadband policy and open WiFi discussed in chapter 8, or open innovation in chapter 3).

## Conclusion

We recognize that the definition of *open development* that we have offered is just one of many potential definitions. We anticipate that the definition will evolve further with time and more research. We also note that our definition is controversial for some—particularly with respect to including freely, but not legally, shared knowledge resources. For the purposes of this book, however, we believe the definition that we give here works to satisfy two important goals: first enabling comparative research that, second, respects the diversity of research contexts. In particular, the focus on openness as social praxis provides a set of practices in a framework for facilitating openness research and comparing across cases and domains (Smith and Seward 2017).

As discussed, this refined formulation of open development emerged in interaction with the research on openness in Global South contexts that IDRC supported over the last decade. Over time, we learned a lot about researching openness and applied these lessons to our definition.

One thing that we have found during the course of this research is that it is generally a better communication strategy to replace the term *open* with a more specific openness practice whenever possible. This specificity helps to avoid potential miscommunications based on alternative interpretations of the term *open*. This is one of the benefits of focusing on the specific practices of peer production, crowdsourcing, sharing, and reuse. These are more readily understandable concepts that do not carry the baggage of multiple interpretations and meanings that accompany the term *open*.

Second, this definition also responds to the diversity of contexts where research is taking place. Domain-specific definitions typically take on a universalistic, best practice character. We have found that these kinds of definitions sit uncomfortably with

the reality of openness as it is carried out and experienced on the ground, as discussed here. Many chapters in this book attest to this disjuncture. In contrast, a focus on practices provides an abstract enough concept to capture variation across contexts without overly prescribing the attributes of the knowledge resource or specifics of the practice. For example, sharing can take many forms, and factors such as intellectual property, document format, the nature of sharing tools, and the subject of content do not determine whether you share, but rather shape the contours and outcomes of the sharing in practice. It is precisely these contours that we need to understand to promote effective sharing, rather than adhering to a predetermined, acontextual—and too often ideological—notion of what it should be. This may not be the most effective approach for advocacy, but we believe that it is useful as a critical research perspective to drive improvements and we hope, ultimately inclusive development outcomes.

Overall, the intention of this chapter is to help scope the contours and contributions of the research in this book. Definitions matter in research, and poor definitions lead to poor research. Open development research has suffered this fate at times. In the course of supporting the research in this book, we have found that the definition offered in this chapter provides a clear and highly practical framework for engaging in open development research. That said, we expect there will be those who take issue with the definition. It is our hope that, whether you agree or disagree with our perspective, you will still find illuminating and useful material in this book to take with you on your open development journey.

## Notes

1. *Praxis*, in the context of this book, signifies the instantiation of theory through processes and activities. Through its orientation to action, open praxis picks up the philosophical threads of participation and social engagement, which in turn align with the broader constructs of open development and the underpinning schools of thought. However, note that praxis has a long philosophical history, and it is not the intention of this book to try to engage in the full spectrum of debate on this subject.
2. Note that *open development* is also more narrowly used to mean open international aid—that is, the sharing of data about international aid activities (e.g., Linders 2013). We consider open international aid one specific instantiation of a broader definition of *open development*.
3. *Knowledge*, as discussed later in this chapter, is “all intelligible ideas, information, and data in whatever form in which it is expressed or obtained” (Hess and Ostrom 2007, 7).
4. Most scholars trace the earliest uses of the term *open government* to papers originating in the United States, though apparently the kingdom of Sweden produced what may have been the first “freedom of information act” in 1766, to disseminate government records (see Manninen 2006).

5. The report, *The People's Right to Know: Legal Access to Public Records and Proceedings*, was written by a newspaper attorney, Harold Cross, and commissioned by the American Society of Newspaper Editors. According to Yu and Robinson (2012), the foreword to the report offered one of the earliest known uses of the term *open government* when it discussed Cross's work, saying that he had "written with full understanding of the public stake in open government" (Yu and Robinson 2012, 185).

6. The Special Subcommittee on Government Information, known as the Moss Committee, helped bring the FOIA to fruition a decade later, in 1966. Wallace Parks was the main counsel for the Moss Committee, and his paper "The Open Government Principle: Applying the Right to Know under the Constitution" was published posthumously in 1957; it became a critical piece of the movement for greater accountability and transparency of government. See also Yu and Robinson (2012, 185–86).

7. The Open Government Declaration of the Open Government Partnership, an initiative launched globally in part with the support of US president Barack Obama in 2011, was one cornerstone of the new open government movement. The declaration can be found here: <https://www.opengovpartnership.org/open-government-declaration>. For anyone concerned about open government (in the United States at least), the removal of the open government portal on the White House website in January 2017 is a disconcerting example of the potential direction of open government at present.

8. These priorities were framed for many years as the "Washington Consensus" for the way that development aid was tied to structural adjustment policies that prioritized neoliberal economic models over state-driven forms of development.

9. On one end of development theory, there are the modernization theorists, who focus on the role of the state and the top-down transfer of Western institutions and values to develop the so-called *underdeveloped* in the postcolonial era (Rostow 1960). Much early participatory-oriented development discourse emerged out of critiques of these notions of development, from dependency theory to discursive political/social theories of language and power (Escobar 1984, 1992, 1995a, 1995b, 1999; Fanon 1961; Foucault 1982; Frank 1966, 1967; Hopkins and Wallerstein, 1982; Spivak 1988; Said 1978; Wallerstein 1976, 1984). Participatory discourse is grounded in bottom-up, people-centered, inclusive narratives that were developed over the twentieth century by scholars in a range of disciplines, from critical anthropology to critical social theory. One of the early, primary figures was Paulo Freire (1970, 1973), who advocated for participation of people in authentic development as active subjects who could, through consciousness raising, help bring about a transfer of power. Note that this is in no way meant to be a full treatment of the subject of participatory development.

10. Robert Chambers from the Institute for Development Studies in Sussex, England, gives a fairly thorough exploration of the range of participatory methods that emerged over the past thirty years. He outlines a range of applications, from community radio to video, which have helped bolster participation. See Chambers (2010).

11. The A2K movement is supported by numerous global compacts, declarations, and agreements, including the Open Access Declaration in Budapest in 2002 (<http://www.budapestopenaccessinitiative>

.org/read); and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities in 2003 (<https://openaccess.mpg.de/Berlin-Declaration>), which laid out the principles of justice, freedom, and economic development, particularly in relation to academic publishing. In addition, there is the Geneva Declaration on the Future of the World Intellectual Property Organization (2004), and the Open Educational Resources Declaration in Paris (2012) is also considered significant piece of the movement. See <https://unesdoc.unesco.org/ark:/48223/pf0000246687>.

12. Access to knowledge and science is protected by Article 27 of the Universal Declaration of Human Rights, which also balances the right of access with the right to protection of moral and material interests: “(1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. (2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.”

13. See Open Knowledge International (n.d.).

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